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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,207	04/16/2004	Jerry H.C. Lee	25341A	1155

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EXAMINER	
MATZEK, MATTHEW D	
ART UNIT	PAPER NUMBER
1794	
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08/13/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/826,207	LEE ET AL.	
	Examiner	Art Unit	
	MATTHEW D. MATZEK	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 May 2008*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-15,17-19,21-23 and 25-31* is/are pending in the application.

4a) Of the above claim(s) *26 and 27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-15,17-19,21-23,25 and 28-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

1. The amendment dated 5/12/2008 has been fully considered and entered into the Record. New claims 28-31 have been added and contain no new matter. Claims 1-3, 5-15, 17-19, 21-23 and 25-31 are now pending. Claims 26 and 27 are withdrawn, leaving claims 1-3, 5-15, 17-19, 21-23, 25 and 28-31 currently active.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 9-15, 17-19, 21-23, 25 and 28-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The use of the term "consisting essentially of asphalt and filler that coats the mat" is inconsistent with the rest of the claim, because the claim then later adds an additional component (i.e. elemental sulfur), which would materially affect the coating by cross-linking it. Examiner takes the position that elemental sulfur is integral to the coating, but would be precluded by the current language. Therefore, claim 9 is internally inconsistent and needs to be amended. The transitional phrase "consisting essentially of" limits the scope of a claim to the specified materials or steps "and those that do not materially affect the basic and novel characteristic(s)" of the claimed invention. In re Herz, 537 F.2d 549, 551-52 190 USPQ 461, 463 (CCPA 1976) (emphasis in original).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 3, 5-8 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US 6,228,785) in view of Marzocchi et al. (US 4,265,563) as set forth in the previous Office Action.

a. Miller et al. teach an asphalt-based roofing material comprising a substrate coated with asphalt (Abstract). The roofing material comprises a glass fiber substrate coated with asphalt and a surface layer of granules embedded in the asphalt coating (col. 1, lines 13-20). The fibers of Miller et al. meet the newly added limitation of fibers having properties suitable for forming a roofing mat in a roof covering. The roofing material may further comprise polymers (col. 3, line 65-col.4, line 1). Miller et al. is silent as to use of a silane-sizing agent for the glass fibers in the asphalt.

b. Marzocchi et al. teach that glass fibers may be used as reinforcement in resins, rubbers, and asphalt (organic material) for use in roads, driveways, bridges, walks and roofs (col. 2, lines 10-20). The glass fibers may be treated with a silane coupling (sizing) composition along with sulfur leaving secondary or primary as well as elemental sulfur dispersed on the surface of the glass fibers (col. 9, lines 35-43). When added to a resin system (asphalt, tar, etc.) the glass fibers become directly bonded to the resin phase to improve strength and impermeability of the properties of the matrix (col. 9, lines 43-50). The sulfur content of the silane coating may be from 0.05 to 40% with a preference from 0.1 to 7% (col. 9, lines 54-59). Overlying the substrate layer 1 (fiberglass) is a wear

course 2 comprising an aggregate and asphalt mixture (col. 4, lines 3-5). The asphalt aggregate may comprise clays, gravel, glass flake or calcium carbonate (col. 4, lines 53-69). In one embodiment an asphaltic, glass flake layer is added on top of the substrate (fiber/asphalt) layer (col. 5, lines 55-63).

c. Since Miller et al. and Marzocchi et al. are from the same field of endeavor (i.e. asphalt covered fiber glass building materials), the purpose disclosed by Marzocchi et al. would have been recognized in the pertinent art of Miller et al.

d. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the glass fiber mat of the composite of Miller et al. with the silane sizing agent with the motivation of improving the adhesion between the fiber glass and asphalt phases.

e. Neither Miller et al. nor Marzocchi et al. explicitly teach the claimed feature of forming cross-links between the sulfur groups and the organic material, the claimed tear strength or the claimed tensile strength, it is reasonable to presume that said properties are inherent to Marzocchi et al. Support for said presumption is found in the use of like materials (i.e. glass fibers sized with a sulfurous silane composition and coated with an organic material). The burden is upon Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties of claims 1, 6 and 22 would obviously have been present one the Marzocchi et al. product is provided. Reliance upon inherency is not improper even though rejection is based on Section 103 instead of Section 102. *In re Skoner,* et al. (CCPA) 186 USPQ 80.

4. Claims 1-3, 5-8 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US 6,228,785) in view of Williams et al. (US 4,210,459) as set forth in the previous action.

a. Miller et al. teach an asphalt-based roofing material comprising a substrate coated with asphalt (Abstract). The roofing material comprises a glass fiber substrate coated with asphalt and a surface layer of granules embedded in the asphalt coating (col. 1, lines 13-20). The fibers of Miller et al. meet the newly added limitation of fibers having properties suitable for forming a roofing mat in a roof covering. The roofing material may further comprise polymers (col. 3, line 65-col.4, line 1). Miller et al. is silent as to use of a sulfide silane-sizing agent for the glass fibers in the asphalt.

b. Williams et al. teach the use of a polysulfide silane-coupling (sizing) agent for glass fibers in rubber composites (Abstract). The coupling agent may also comprise vinyl groups, yielding a vinyl silane (col. 4, lines 13-40). It is generally preferred to size the fibers prior to their incorporation into the composite (col. 14, lines 48-60). The polysulfide organosilicon-coupling agent may also be added to the rubber matrix and the sulfur concentration may be from about 0.5 to 4 weight percent of said matrix (col. 13, lines 47-52 and col. 14, lines 24-28).

b. Since Miller et al. and Williams et al. and from the same field of endeavor, (i.e. fiber glass in organic matrices), the purpose disclosed by Williams et al. would have been recognized in the pertinent art of Miller et al

c. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the sulfide silane coupling agent of Williams et al. one the

glass fibers as well as in the matrix motivated by the desire of simplifying the coating of the glass fibers to one chemical treatment and to improve the strength of the resin phase with the addition of the polysulfide silane.

d. Neither Miller et al. nor Williams et al. explicitly teach the claimed feature of forming cross-links between the between the sulfur groups and the organic material, double-bonds, the claimed tear strength or the claimed tensile strength, it is reasonable to presume that said properties are inherent to Williams et al. Support for said presumption is found in the use of like materials (i.e. glass fibers sized with a sulfurous silane composition and coated with an organic material). The burden is upon Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. Reliance upon inherency is not improper even though rejection is based on Section 103 instead of Section 102. *In re Skoner,* et al. (CCPA) 186 USPQ 80.

5. Claims 9-15, 17-19, 21, 23, 25 and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US 6,228,785) in view of Williams et al. (US 4,210,459) as applied to claim 1 above, and further in view of Liang et al. (WO 00/44975). The disclosures of Miller et al. and Williams et al. fail to teach the use of elemental sulfur in the asphalt matrix.

a. Liang et al. disclose a modified bituminous composition for roof membranes (title) comprising asphalt and elemental sulfur for cross-linking within the composition at loading rates ranging from about 0.05 to 0.2 weight percent (page 4).

b. Since Miller et al. and Liang et al. are from the same field of endeavor (i.e. asphalt-based roofing), the purpose disclosed by Liang et al. would have been recognized in the pertinent art of Miller et al.

c. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention of Miller et al. the elemental sulfur of Liang et al. with the motivation of forming a bituminous composition with a range of viscosities that are readily processed as compared with conventional non-cross-linked systems as disclosed by Liang et al. (abstract).

d. Amended claim 9 now recites a coating material consisting essentially of asphalt and filler. Examiner has relied upon Liang et al. for the addition of elemental sulfur, not replacement of the coating of Miller et al. with that of Liang et al., therefore the additional components set forth in Liang et al. are immaterial to the rejection.

e. Claims 10-13 are rejected as the polysulfide silane disclosed by Williams et al. possesses sulfur and vinyl groups (col. 4, lines 18-34, Williams et al.).

f. Claim 14 is rejected as the combination of the instantly applied art yields an article that is compositionally and structurally the same as that of Applicant.

g. Claims 19 and 20 are rejected as the amount of sulfur instantly applied meets the claimed limitations and provides the bonding between the glass fibers and the asphaltic matrix (col. 14, lines 24-34, Williams et al.).

h. New claims 28 and 29 are rejected as Liang et al. disclose adding elemental sulfur at the claimed level (page 4).

i. None of the applied references explicitly teach the claimed feature of the claimed tear strength, it is reasonable to presume that said property is inherent to applied combined invention. Support for said presumption is found in the use of like materials (i.e. glass fibers sized with a sulfurous silane composition and coated with an organic

material). The burden is upon Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. Reliance upon inherency is not improper even though rejection is based on Section 103 instead of Section 102. *In re Skoner,* et al. (CCPA) 186 USPQ 80.

Response to Arguments

6. Applicant's arguments filed 5/12/2008 have been fully considered but they are not persuasive.

7. Applicant argues that it is improper to combine the teachings of Marzocchi et al. with those Miller et al. and the teachings of Miller et al. and Williams et al. because they relate to distinctly different fields. As set forth in the prior art section of Marzocchi it is well known that glass fibers have been used extensively in the reinforcement of resins, rubbers and asphalts (col. 2, lines 12-15) in the creation of both roof coverings and road foundations (col. 3, lines 3-41). Therefore, one of ordinary skill in the art would have been motivated to look to Marzocchi to improve the adhesion between the glass fiber and asphalt matrix phases as they are used in the inventions of Miller and Marzocchi and are from the same field of endeavor, asphalt construction materials. Mr. Jones' expert opinion has been taken into account, however both Miller and Marzocchi use asphalt matrices with glass fiber reinforcement and both Miller and Williams set forth glass fibers in organic matrices. By improving the bond between the matrix and reinforcement phase of the composite the structural integrity of the article is improved. Therefore, it would have been reasonable for one of ordinary skill in the art to look to other asphalt or organic composites that use glass fibers for reinforcement for means to improve adhesion between the two phases of the composite.

8. Applicant argues that the teachings of Marzocchi et al. relate to glass flakes in a road paving composition not to fibers having properties suitable for forming a roofing mat in a roof covering as recited in claim 1. Examiner has relied upon Miller et al. to provide the newly claimed fibers having properties suitable for forming a roofing mat in a roof covering. Examiner has relied upon Marzocchi et al. to teach the use of a silane-sizing agent.

9. Applicant argues that if the teachings of Miller et al. and Marzocchi et al. are combined the resulting product would not be a roofing material having significantly improved tear strength as claimed. Applicant has failed to demonstrate how the combination of Miller et al. and Marzocchi et al. results in a structurally different product than that which is currently claimed and as such failed to adequately establish why the resulting product would not be a roofing material having significantly improved tear strength as claimed. The addition of the sizing material to the Miller et al. invention would result in improved adhesion between the glass fibers and the rest of the roofing material, thereby improving the overall tear strength.

10. Applicant argues the coating material of now amended claim 9 does not include elastomer or other polymer and as such one of ordinary skill in the art would not have been motivated to add elemental sulfur to the coating material. The use of the term "consisting essentially of asphalt and filler that coats the mat" is inconsistent with the rest of the claim, because the claim then later adds an additional component (i.e. elemental sulfur). Examiner takes the position that elemental sulfur is integral to the coating, but would be precluded by closed ended language. Examiner has relied upon Liang et al. to teach the use of elemental sulfur for cross-linking in bituminous coatings and not relied upon its teaching of elastomer or other polymer into the coating.

11. Applicant argues that it would not be obvious to have looked to Liang et al., which is from the field of roofing membranes, not to roofing shingles as recited in the present claims. Liang et al, Miller et al. (which Liang et al. modifies) and the instantly claimed invention are all directed to roofing articles and as such it would have been obvious to have looked to Liang et al. to modify Miller et al. to arrive at the claimed invention.

12. Applicant argues that Mr. Lee's education and work experience qualify him as an expert in the technology of roofing shingles and that in his expert opinion it was surprising and unexpected result to achieve the significant improvements in tear strength of the shingles as a result of the relatively small amounts of elemental sulfur added to the coating material. As noted by Applicant, Examiner has acknowledged that the addition of elemental sulfur does improve the tear strength, but Applicant's opinion does not replace factual evidence to support their claim of unexpected results, especially when the prior art does teach the use of elemental sulfur in bituminous coatings.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW D. MATZEK whose telephone number is (571)272-2423. The examiner can normally be reached on M-F, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571.272.1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew D Matzek/
Examiner, Art Unit 1794

/Norca L. Torres-Velazquez/
Primary Examiner, Art Unit 1794